

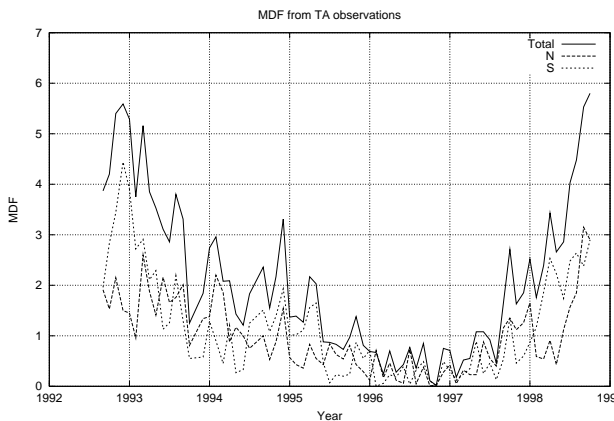
White light MDF, 1998 September

Observer	MDF				R		Q	
	North	South	Total	Days	Total	Days	Total	Days
P. Meadows		3.53	7.07	15	109.47	15	20.60	15
G.F. Johnstone	3.00	2.20	5.20	5	-	-	-	-
E.H. Strach	2.82	3.04	5.86	28	89.07	28	18.86	28
K.J. Medway	2.13	2.21	4.34	23	-	-	-	-
W.F. Heyes	2.40	2.80	5.20	5	-	-	14.40	5
M.J. Hendrie	3.73	3.40	7.13	15	100.47	15	-	-
G. North	2.91	2.82	5.73	11	100.60	11	-	-
MEANS	2.90	2.90	5.80	102	97.82	69	18.94	48

MDF = Mean Daily Frequency of active areas, R = sunspot number, Q = mean quality estimate (JBAA 98,6,pp282-286)

Sunspot Activity, 1998 September

Sunspot activity in September showed a small rise over the previous month. Two large spot groups were seen during the period, one of which was possibly the largest so far this cycle. Although there were fewer prominent groups compared to August, the group MDF and sunspot number were both slightly higher.



Unsmoothed MDF from TA observations for the last six years.

During the first week of the month Strach reports that the large Fkc group at S21/272 dominated the solar disk. On the 3rd this group was near the CM and Meadows estimated that it had an area of 1340 millionths. He notes that it was probably the largest area of any group of this solar cycle so far. This group consisted of two close asymmetrical penumbral spots with a few surrounding spots. A number of observers report that both of these penumbral spots were seen to the naked eye. In fact Medway reports that the spots were seen with the naked eye between the 1st and the 5th. Meadows estimated that the mean location of this group was S20/272 and he classified it as Ekc.

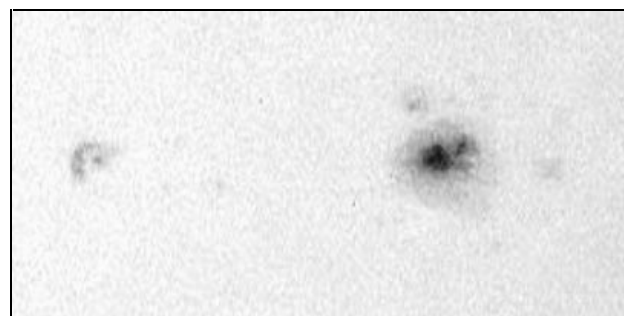
The appearance of the group on the 4th is shown in the figure. Strach reported that it spanned more than 16° of longitude on that day and it contained a total of 30 individual spots. He notes that this group had survived its passage on the averted hemisphere and that it was first seen on the E limb on August 2. Both main

penumbral spots had decayed in size by the 7th and its follower was last seen close to the W limb on the 10th.



Giant sunspot group at S20/272 spanning 16° of longitude. 1998 September 4, 1200UT. EHS.

On the 7th Meadows noted that three N hemisphere groups were at almost the same longitude. These were at N15/198 (type Dso, area 170 millionths), N22/198 (type Dao, area 110 millionths) and N31/197 (type Hsx, area 40 millionths). Of these three groups, the southern most group lasted the longest - it was the only one visible on the 12th. A similar arrangement of three groups was seen again later in the month but in the S hemisphere. On the 20th, for example, three groups were at S15/50 (type Cso, area 40 millionths), S28/53 (type Dai, area 60 millionths) and S38/62 (type Dao, area 50 millionths). Only the middle of the three was seen on the 25th, although a small Dso group appeared at S11/42 on the 27th.



N19/13 Spot group. 1998 September 20. 1209UT. NDJ

Although solar minimum was over two years ago, several high latitude groups were seen during the month: at N31/196 between the 3rd and 8th (type Hsx), at S40/64 between the 16th and 23rd (type Dao on the

20th), at N31/19 between the 17th and 27th (type Hsx) and at N38/358 between the 20th and 25th (type Cso on the 21st). The second largest group of the month appeared around the E limb on the 17th and Strach reported the position as N19/15 on that date. He notes that it was evidently a return from the previous rotation having survived its passage across the averted hemisphere. When Meadows saw it on the 21st it was at N19/13 and he classified it as type Dki with an area of 400 millionths. Its appearance on this date was of a main irregularly shaped penumbral spot surrounded by

small penumbral spots and other spots (see figure). Medway reports that the spot was seen with the naked eye on the 22nd. The size of the group on the 23rd was 480 millionths and the main penumbral spot was still quite irregular in shape. The number of surrounding spots increased as the group passed the CM. When last seen on the 27th, only three attendant spots could be seen together with a more symmetrical main penumbral spot. On its passage across the disk, this group had a small preceding Cso group at N18/27.

Prominence MDF, 1998 September

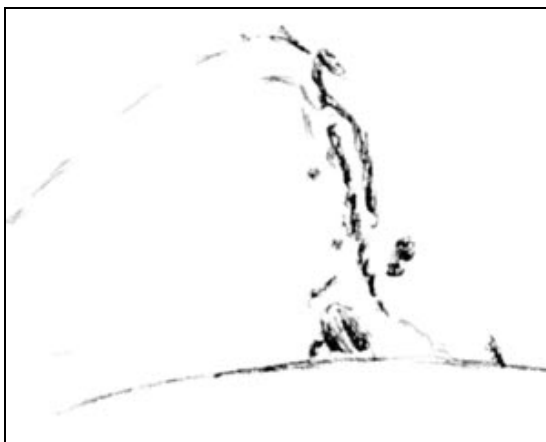
Observer	All Latitudes				0-40°			40-90°		
	North	South	Total	Days	North	South	Total	North	South	Total
E.H. Strach	3.44	3.24	6.68	25	1.56	1.60	3.16	1.88	1.64	3.52
K.J. Medway	3.50	2.25	5.75	8	2.63	1.50	4.13	0.87	0.75	1.62
M. Hendrie	4.00	3.67	7.67	3	3.00	2.67	5.67	1.00	1.00	2.00

Prominence activity, 1998 September

Strach notes that the prominence count was relatively low given the rise in white-light activity. Despite this some prominences were of considerable interest. He notes that fine hedgerow prominences were present on the W limb on the 10th/11th between N51 and N58. On the 16th activity had moved to the E between S43 and S54.

Medway reports that prominences were mostly small during the month. He saw a number of pillars on the SW limb on the 19th and 22nd.

On the 21st Strach noted a high, spike prominence on the E limb at N6. On the next day it had doubled up becoming a tower-like feature with a height of 115,000 km. It was still present, though smaller, on the 23rd and Hendrie estimated that it was still around 100,000 km high (see figure). The prominence did not appear as a filament on the disk after the 23rd and Strach speculates that it was ejected.



Tall prominence ~100,000 km high. 0.7 Å H α filter. 1998 September 23. 1355UT. MJH.

Strach saw many filaments during the month. The long filament along the N50 parallel which was seen at the

end of August was still in evidence at the beginning of September but it was shifted by the solar rotation towards the W limb. Its preceding portion reached the limb on the 3rd in the form of a small prominence at N53. The most outstanding filament was seen at the beginning of the month. It was seen in the S about 15° to the E of the large spot at S21/272. This was last seen on the 7th and there was no trace of it on subsequent days.

On the 19th Strach reported that the E hemisphere contained more than 15 filaments whilst there were only two in the W. On the 24th eight marked filamentous structures followed and preceded the very active spot group at N19/13.

Flares, 1998 September

Date	Time	Lat	CMD	Type	Obs.
3	1445	S20	E20	Sf	EHS
3	1540	N23	E90	Sf	EHS
4	1205	S22	E6	Sf	EHS
5	1250	S18	E68	Sb	KJM
5	1735	S11	W12	Sb	KJM
6	1325	S18	W33	Sb	KJM
7	0813-1820	N18	E35	Sf	EHS
11	0935-0945	N20	W16	1n	EHS
12	1020-1035	N11	W62	Sn	EHS
20	0950	S32	E6	Sf	EHS
20	1025-1035	N21	E32	Sn	KJM
20	1123	N20	E35	Sf	KJM
20	1138	N20	E32	Sn	KJM
20	1343-1355	N21	E32	Sb	KJM
20	0947-0957	S22	E28	1b	KJM
23	0755-0830	N20	E15	2b	EHS
24	0820-0830	S15	E13	Sf	EHS
25	1200-1205	N20	W18	Sf	EHS

Solar reports can be found on the TA web at:
<http://www.demon.co.uk/astronomer/solar.html>